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EXPELLING EXCELLENCE:

Exchange Visitor Restrictions on High-Skill Migrants in the United States

Examining the Exchange Visitor Skills List, a little-known restriction on high-skill immigration to the United States

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Abstract

We examine a little-known restriction on high-skill immigration to the United States, the Exchange Visitor Skills List. This List mandates that to become eligible for long-term status in the U.S., certain high-skill visitors must reside in their home countries for two years after participation in the Exchange Visitor Program on a J-1 visa. While well-intended to prevent draining developing nations of needed skills, today the Skills List in practice is outdated and misdirected. It is outdated because it fails to reflect modern economic research on the complex effects of skilled migration on overseas development. It is misdirected because, as we show, the stringency of the List bears an erratic and even counterproductive relationship to the development level of the targeted countries. The List is also opaque: there have been no public estimates of exactly how many high-skill visitors are subject to the list. We provide the first such estimates. Over the last decade, an average of between 35,000 and 44,000 high-skill visitors per year have been subject to the home residency requirement via the Skills List. Despite the stated purpose of the List, these restrictions fall more heavily on relatively advanced economies than on the poorest countries. We describe how a proposed revision to the List can address all three of these concerns, balancing the national interest with evidence-based support for overseas development.

Introduction

The Exchange Visitor (J-1) visa promotes mutual understanding and international cooperation by allowing the exchange of ideas in people-to-people programs across the United States in 15 categories of activity, ranging widely from camp counselors to professors. Many J-1 programs attract individuals who either are or will later be high-skill professional workers. But a half-century-old set of restrictions on these visitors, the Exchange Visitor Skills List, obliges many of these skilled visitors to be physically present in their home country for at least two years after their J-1 stay and before considering any opportunities to relocate to work and live long term in the U.S. Here we provide new, quantitative estimates of how the Exchange Visitor Skills List affects these individuals.

The J-1 visa enables, among others, students, skilled professionals, and experts, most commonly early in their career,[1] to temporarily enter the United States to participate in collaborative research, obtain practical experience, and receive training in their area of expertise. This visa is commonly used by researchers, educators, healthcare professionals, and other individuals developing specialized expertise, allowing them to stay for approximately 1–5 years. The J-1 visa is for nonimmigrants, who are provided status only through the end date of their particular exchange visitor program. Moreover, according to a law enacted in 1970, once the J-1 program ends, some of these exchange visitors are mandated to return to their home country for two years before they are eligible to apply for permanent residency in the U.S. or other long-term work visas.

This "home residency requirement" is generally enforced if the J-1 visa holder's country is designated by the U.S. State Department as "clearly requiring the services of persons engaged in the field of specialized knowledge or skill in which the alien was engaged."[2] This designation is made in the Exchange Visitor Skills List, which specifies the pairs of countries and fields that require migrants to return home.

Here we present evidence that the Skills List is outdated, misdirected, and opaque. It is outdated because it is built with a rationale and method that are half a century old and reflect ideas about high-skill migration that are no longer current. It is misdirected because it erratically targets countries independently of their level of development, and targets fields independently of whether they are "required" in the home country by any clear criterion. And it is opaque because there are no prior published estimates of the number of high-skill migrants affected by the List; we provide the first estimates. We address these shortcomings by describing proposed improvements to the way the List is built.

1. 86% of J-1 exchange visitors are 30 years or younger, according to the State Department's Facts and Figures.

2. It is also enforced, regardless of their country of origin, if the migrant's J-1 exchange visitor stay is for graduate medical education or training as a clinical physician or is funded by either their home country government or the U.S. Government.

A policy process is currently underway to revisit the Skills List. In President Biden's October 2023 "Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence," the Secretary of State was instructed to consider establishing "new criteria to designate countries and skills on the Department of State's Exchange Visitor Skills List" and to "consider publishing updates" to the current Skills List, last updated in 2009. Following this instruction, in March of 2024, the State Department submitted to the Office of Information and Regulatory Affairs a final rule on the Exchange Visitor Skills List for review.

As we describe below, the literature on skill flow and development has grown tremendously in the last thirty years. Economists and other social scientists now have a much richer understanding about the complex relationship between economic development and the movement of skilled individuals than when the Skills List was first created in the 1970s. We now know that global networks of skilled migrants are a crucial conduit for ideas, investment, trade, and technological advances for migrants' countries of origin. We now know that the opportunity to use skills abroad has been a major engine of human capital *formation* across the developing world. In other words, we have uncovered a variety of ways that barriers to skilled migration can *harm* development at home.[3]

Unfortunately, these advances in our knowledge have never been adequately reflected in published Skills Lists, despite periodic revisions. The first Skills List was published in 1972. New lists have been comprehensively revised only three times — in 1984, 1997, and 2009 — with various smaller revisions published in intervening years. While the State Department doesn't share how the Skills List is determined, other than that it is done in "consultation with foreign governments and overseas posts," it seems that prior updates have reflected an excessive and simplistic focus on "brain drain" that — though well intended and thoughtful — is no longer supported by evidence.

Background on the Skills List

The development effects of skilled migration have been a key concern for several decades. The Skills List was first required by a 1970 amendment to the Immigration and Nationality Act (INA) that sought to limit the scope of the two-year home residency requirement by narrowing who it applied to and expanding the ability for migrants to get waivers.[4] After section 212(e) of the INA was amended, the Skills List would be one of the remaining ways to subject exchange visitors to the requirement that they return home for two years.

The new law provided that an exchange visitor would remain subject to the two-year home residency requirement if she was from a country which the State Department had "designated as clearly requiring the services of persons engaged in the field of specialized knowledge or skill in which the alien was engaged."[5] n congressional debate about the 1970 law, Rep. Michael Feighan explained that the new idea for a Skills List was intended to identify "persons from developing countries clearly requiring the aliens[’] skills."[6] As Rep. Peter Rodino explained, "it is not reasonable to force a person to return home to an atmosphere where he cannot utilize his abilities to the fullest extent," except when letting them stay in the United States is "not in the interest of his home country."[7]

This thinking reflects the research literature of its time. Leading up to the 1970 Act, economists had developed the concept of "human capital," and began thinking through how it was affected by migration. In 1966, Grubel and Scott argued that "the transfer of human capital occurring when highly skilled people emigrate between countries always reduces the economic and military power of the migrant's native country," though they maintained the effect was probably small in the long-run because replacements can be trained.[8] In 1968, Aitken published a reply pointing out an error in Grubel and Scott's analysis (namely,

3. A non-technical summary of the state of research as of 2009 is presented in Michael Clemens, "Skill Flow: A Fundamental Reconsideration of Skilled-Worker Mobility and Development," Center for Global Development (2009). However, there have been important contributions to the literature since then. While we don't have space in this policy brief to cover recent developments at the level of detail they deserve, they are sketched out below.
4. Originally, the 1961 statute creating the J-1 exchange visitor visa made all J-1 visa holders subject to the requirement for two years of home country physical presence (Pub. L. No. 87-256, September 21, 1961, at Section 109(c), creating new sections 101(a)(15)(J) and 212(e) of the INA). This was pointedly reversed by Congress in a 1970 legal reform that included removal of the two-year home residency requirement for all J-1 visa recipients unless they met the exceptional conditions of government sponsorship or were developing skills "clearly required" by the home country (Pub. L. No. 91-225, April 7, 1970, at Section 2, revising Section 212(e) of the INA). This evolution clarifies that the 1970 law does, and was intended to, make the default condition that of eligibility to apply for status to remain in the United States without regard to returning to one's home country. There is no affirmative obligation to prove that the individual J-1 participant's skills are not required.
5. 8 USC 1182: Inadmissible aliens, https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title8-section1182&num=0&edition=prelim.
6. Congressional Record, House of Representatives, March 3, 1970, https://www.congress.gov/bound-congressional-record/1970/03/03/house-section.
7. Ibid.
8. Grubel, Herbert B., and Anthony D. Scott. "The International Flow of Human Capital." American Economic Review 56, no. 1/2 (1966): 268–74, http://www.jstor.org/stable/1821289.

that they were considering emigration of one marginal worker at a time, not emigration of large numbers of workers at once) and concluded that skilled emigration will significantly reduce income in developing countries even in the long-run. Aitken also argued that these negative effects may be even larger when the effects of economies of scale (and other positive externalities) and the opportunity cost associated with training replacements are taken into account.[9] Just after enactment of the 1970 law, in an influential paper from 1974, Bhagwati and Hamada furthered this consensus with a model that suggests another cost of "brain drain" would be in unemployment, as workers overinvest in skills as a ticket to leave.[10] Bhagwati recommended a tax on skilled migrants to offset what he saw as the harm they *necessarily* inflict on low-income countries by their decision to depart.

In short, the Skills List emerged against a backdrop of leading economists in basic agreement that the emigration of skilled workers would tend to reduce the per-capita income of people in developing countries. They disagreed among themselves about the magnitude of the negative effect, the effect it had on total social welfare (i.e., whether the benefits to the migrant might outweigh losses to their home country), and the correct policy response. Nevertheless, the consensus was that people who were left behind would be negatively affected. Regulations on skilled migration were fundamentally viewed as trading off migrants' *individual* freedoms against the ostensible *social* harms of migration. But that position is no longer supported by mainstream economic research.

The outdated rationale for the Skills List

Starting in the late 1990s, there has been a sea change in our understanding of the effects that skill flows have on developing countries. This evolution has been called the "new economics of the brain drain."[11] The fundamental insight of this literature is that origin countries can benefit from international flows of skilled workers, including by their permanent emigration. This is because international flows of technology, entrepreneurship, trade, and investment typically flow through networks of *people*, networks that depend on skilled migration, and because the prospect of emigrating induces more people to invest in acquiring skills. This has brought leading development economists to speak of "brain gain" rather than "brain drain."

In 1997, two theoretical papers were published that made an important contribution to analyzing how emigration affects development: they model how living standards are affected by emigration if human capital can have positive economic spillovers.[12] The result is that when more people choose to invest in acquiring skills, this can increase growth and living standards in the source country. In the first decade of the 21st century these debates finally began receiving much-needed empirical investigation, confirming that skilled emigration often increases skills in a country of origin in the real world.[13] The result has been an explosion of both theoretical and empirical research, with hundreds of articles written on the subject in the second half of that decade — twice as many as in the preceding 15 years.[14]

Perhaps the strongest evidence from this empirical work has been quasi-experimental papers showing that in practice, skilled emigration has caused the formation of *greater* skill stocks in numerous developing countries — even net of departures. For example, Batista, Lacuesta, and Vicente find that increased migration opportunities in Cape Verde would

9. Aitken, Norman D. "The International Flow of Human Capital: Comment." American Economic Review 58, no. 3 (1968): 539–45, http://www.jstor.org/stable/1813787.

10. Bhagwati, Jagdish and Koichi Hamada, "The Brain Drain, International Integration of Markets for Professionals and Unemployment: A Theoretical Analysis." Journal of Development Economics 1 (1974):19-42.

11. Stark, Oded, "The New Economics of the Brain Drain." World Economics 6, no. 2 (2005): 137-140.

12. Mountford, Andrew, "Can a Brain Drain be Good for Growth in the Source Economy." Journal of Development Economics 53, no. 2 (1997): 287-303, https://www.sciencedirect.com/science/article/abs/pii/S0304387897000217. See also Stark, Oded, Christian Helmenstein, and Alexia Prskawetz, "A Brain Gain with a Brain Drain." Economics Letters 55, no. 2 (1997): 227-234, https://www.sciencedirect.com/science/article/abs/pii/S0165176597000852.

13. For example, see Beine, Michel, Fréderic Docquier, and Cecily-Oden-Defoort, "A Panel Data Analysis of the Brain Gain," World Development 39, no. 4 (2011), 523-532, https://www.sciencedirect.com/science/article/abs/pii/S0305750×10002366.

14. Gibson, John and David McKenzie, "Eight Questions about Brain Drain." Journal of Economic Perspectives 25, no. 3 (2011): 107-128, https://pubs.aeaweb.org/doi/pdf/10.1257/jep.25.3.107.

lead to significant human capital gains.[15] Chand and Clemens recently found that a surge in skilled emigration from Fiji caused enough additional skill formation there to fully offset the skills lost to departure.[16] In another new and ground-breaking study, Abarcar and Theoharides find that changes in U.S. demand for nurses caused nine more nurses to be licensed *in the Philippines* for every one that came to the United States.[17] The very possibility to emigrate raises workers' return to investing in skill, causing them to invest in higher skill — *even for those who do not end up leaving.*

In addition to the "new economics of the brain drain," there are additional mechanisms economists have identified by which skilled emigration can improve development prospects, including:

1. *Trade networks:* Migration can create new networks that create opportunities for trade, investment, technological diffusion, and other phenomena that can benefit source countries. Dany Bahar and Hillel Rapoport, two of the world's leading economists studying migration and development, have shown that skilled migrants are a crucial catalyst for transfers of modern technology to arrive in and spark economic growth in developing nations. Countries with larger stocks of skilled emigrants *abroad* are much more likely to start producing and exporting products that are common in the migrant-destination countries but that the origin countries have never produced and exported before.[18] In other words, the ideas that spark economic growth don't just travel through the ether: they travel through networks. Those networks are built by skilled emigration.

2. *Entrepreneurship:* In granular case studies, sociologist AnnaLee Saxenian has documented how the high-tech export industries that have been so crucial to economic development in India and Taiwan got their start through global networks of highly skilled emigrants from those countries. In other words, the jobs that those industries created in the home countries were made possible by skilled emigration from those countries.[19]

3. *Capital flows:* The volume of remittances to the developing world are a major source of finance for development. Back in the 1970s, official foreign aid was several times larger than remittances. Today it is the reverse: migrants' remittances are roughly triple the size of all official foreign aid combined. And highly skilled migrants remit more than less skilled migrants do.[20] The same is true for capital flows by private enterprise: Migrant networks cause more foreign direct investment to flow to developing countries, and this effect is largest for highly skilled migrants.[21] Put differently, this evidence implies that restricting international migration by skilled workers costs developing countries the very finance that they need to kickstart development.

While the theoretical possibility still exists for emigration to set back the economic development at some times in some countries of origin, the mounting empirical evidence suggests that this is more the exception than the rule.

Visitors targeted by the current Skills List

The Skills List premise is that J-1 visitors exchanging ideas and experiences with their American counterparts will return home as workers, providing services in their home countries. Thus, we discuss here "foreign workers," even though the high-skill professionals holding J-1 visa status we are focused on are

15. Batista, Catia, Aitor Lacuesta, and Pedro C. Vicente, "Testing the 'Brain Gain' Hypothesis: Micro Evidence from Cape Verde." Journal of Development Economics 97, no. 1 (2012): 32-45, https://www.sciencedirect.com/science/article/abs/pii/S0304387811000083.

16. Chand, Satish and Michael Clemens, "Human Capital Investment Under Exit Options: Evidence from a Natural Quasi-Experiment." Journal of Development Economics 163 (2023): 103-112.

17. Abarcar, Paolo and Caroline Theoharides, "Medical Worker Migration and Origin-Country Human Capital: Evidence from U.S. Visa Policy," The Review of Economics and Statistics 106, no.1 (2024):20-35, https://direct.mit.edu/rest/article-abstract/106/1/20/107668/Medical-Worker-Migration-and-Origin-Country-Human.

18. Bahar, Dany, and Hillel Rapoport. "Migration, knowledge diffusion and the comparative advantage of nations." Economic Journal 128, no. 612 (2018): F273-F305, https://doi.org/10.1111/ecoj.12450.

19. AnnaLee Saxenian, The New Argonauts: Regional Advantage in a Global Economy, Harvard University Press (2007).

20. Bollard, Albert, David McKenzie, Melanie Morten, and Hillel Rapoport. "Remittances and the brain drain revisited: The microdata show that more educated migrants remit more." World Bank Economic Review 25, no. 1 (2011): 132-156.

21. Javorcik, Beata S., Çağlar Özden, Mariana Spatareanu, and Cristina Neagu. "Migrant networks and foreign direct investment." Journal of Development Economics 94, no. 2 (2011): 231-241, https://doi.org/10.1016/j.jdeveco.2010.01.012.

most often collaborating, researching, teaching, sharing their expertise, or learning on-the-job (and not simply "workers").

The effect of the Skills List on foreign workers is opaque. The U.S. government does not publish estimates of the number of high-skill foreign workers in the U.S. affected by the home residency requirement. We are not aware of any prior estimates of this number from outside the government.

Here we estimate the number of high-skill professional workers covered by the Skills List in each of the last 10 years, subject to constraints of available data. Patterns in the data allow us to make such estimates with high accuracy, and high confidence that the estimates are slightly conservative. Here we describe a simple rule for assessing when a worker in the data is an *Affected High-Skill Visitor*: a J-1 visitor is estimated to be a "high skill" visitor affected by the Skills List when 1) the Skills List designates her field of specialization for her country of citizenship and 2) the vast majority of J-1 participants in her same field of specialization are in program categories that are both affected by the Skills List and that we identify comprise "knowledge workers."

Novel data and definition of Affected High-Skill Visitors

We obtained a novel data extract from the Student and Exchange Visitor Information System (SEVIS), tabulating the full universe of first-time active J-1 visa recipients from FY2014–2023 by *country* (e.g., Senegal, Bolivia), *field* (e.g., Engineering, Philosophy), and *J-1 program category* (e.g., Professor, Au Pair). Three-way tabulation is only available to us for five major countries: China, India, Korea, Brazil, and Colombia. For all other countries, in each year, we have three separate two-way tabulations: country-by-field, country-by-category, and field-by-category.

Thus we require a method to estimate what fraction of the workers from a given country and field are Affected High-Skill Visitors, that is "high skill" and also subject to the Skills List. We define "high skill" visitors as those in fields that are "knowledge-intensive" — that is, where all or nearly all visitors are in J-1 program categories that we define as "knowledge workers."

Knowledge workers include those whose program category requires that they have or are pursuing an undergraduate or advanced degree from a U.S. or foreign university, are regarded as specialized "experts" in a field of knowledge, or have experience in a specialized field of knowledge. While medical doctors coming to the United States to develop skills as clinical physicians are certainly knowledge workers, they are excluded from our classification of *Affected* High Skill Visitors because they can be distinguished in the data and because such J-1 visa recipients are generally subject to a two-year home residency requirement independent of the Skills List, under a separate provision of law.[22]

Our classification of knowledge workers omits J-1 visa recipients who are au pairs, camp counselors, and high school students. It furthermore omits students on summer work travel, who are required to be students at overseas universities on their way to earning degrees — a debatable choice that tends to make our estimates conservative.

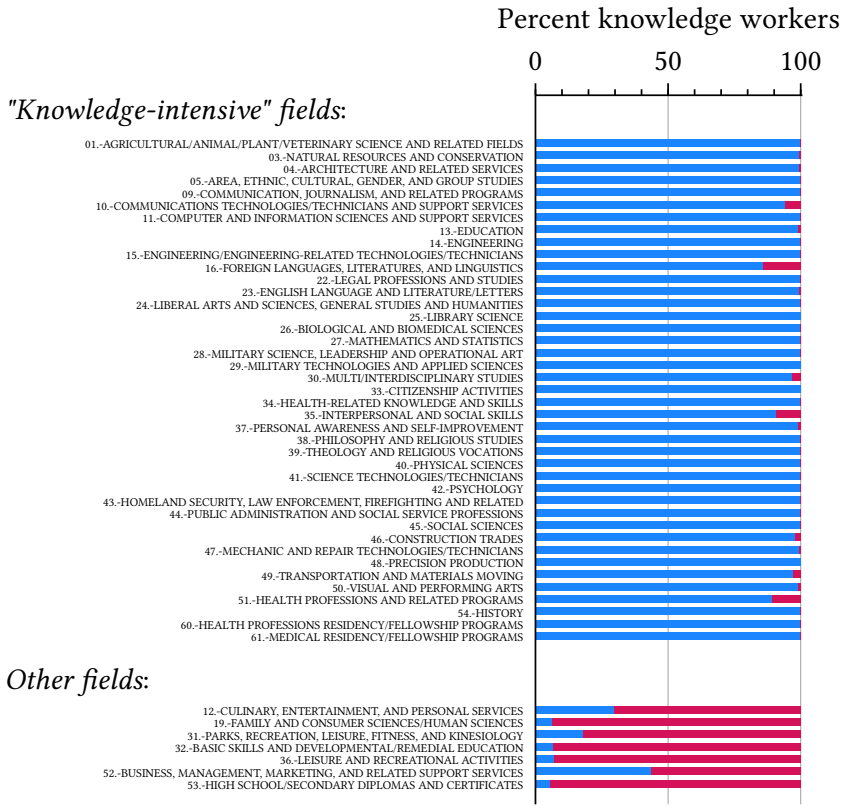
This criterion for "knowledge workers" comprises the following J-1 program categories.[23] *Professors, Research Scholars,* and *Short-Term Scholars* typically hold advanced degrees and are carrying out research or university-level teaching in the United States, and can include medical doctors in non-clinical roles[24] of observation, teaching, or research. Specialists are defined by the State Department as "experts in a field of specialized knowledge or skill." *Teachers* hold a university degree in their field. *Trainees* have either a university degree or several years of experience in a specialized field of knowledge. *College and university students* are studying in the U.S. for an undergraduate or advanced degree, or are in the U.S. fulfilling academic requirements, sometimes as student interns, for an overseas university degree. *Interns* are engaged in or have recently completed a foreign university degree.

22. For that reason, the Alien Physician category, used almost exclusively by clinical physicians, is not included in our analysis of the impact of changes to the Exchange Visitor Skills list.

23. International Visitors and Government Visitors are not listed here because the Skills List cannot be relevant for these J visa recipients, who are subject to the home residency obligation because these are government-funded programs. Thus these, like physicians are not Affected High-Skill Visitors because their home residency requirement is not affected by the Skills List. As we will discuss below, when using our rule for estimating affected high-skill workers, we estimate only about 4.5% and 2.7% of the individuals we classify are in the International Visitors and Government Visitors categories respectively.

24. Clinical physicians in J-1 status must use the Alien Physician J-1 program category. Medical doctors in non-clinical roles while in the U.S. can be in a variety of J-1 program categories, such as Research Scholar or Short-Term Scholar.

Figure 1:
Percent of recent J-1 recipients in "knowledge worker" J-1 categories (in blue), by field of specialization, for all countries collectively



Field classification by the authors. "Percent knowledge workers" means the percentage of J-1 visa recipients in each field who satisfy the definition of "knowledge worker" detailed in the above text. Data on the full universe of first-time active J-1 visa recipients from SEVIS. Covers fiscal years 2021–2023, for all countries of visitor origin collectively.

A rule for estimating Affected High-Skill Visitors

Because the exact number of professional visitors who are (or are not) considered "knowledge workers" is unobservable in the data we have for most countries within country-field pairs, we must proxy for unobservable "knowledge workers" with their fields. We classify workers as "knowledge workers" when they are in "knowledge-intensive" fields — that is, in fields where the vast majority of workers are in "knowledge worker" J-1 program categories.[25] We omit workers from the "knowledge worker" classification when they are not in "knowledge-intensive" fields. When in doubt, we err on the side of excluding workers from this "knowledge workers" classification, tending, again, to make our estimates conservative.

Figure 1 describes the fields that our rule classifies as "knowledge-intensive." Each bar shows the fraction of visitors in each field who are in fact in "knowledge worker" J-1 categories (Research Scholar, Student-Doctorate, etc.) in blue. It shows the fraction who are not in "knowledge worker" J-1 categories in red.

Figure 1 shows that such a rule is feasible: Fields can be an accurate and conservative proxy for worker categories.

The figure reveals that our rule is highly specific, that is, it exhibits a low false-positive rate. Across all countries, the vast majority (99%) of visitors in fields we classify as "knowledge-intensive" fields are in "knowledge worker" categories. For example, we include all workers whose field is 14, *Engineering*, of which 99.9% are in "knowledge worker" categories; we

25. Here, as in our SEVIS dataset, fields of activity are defined by the Classification of Instructional Programs (CIP) code set by the National Center for Education Statistics of the U.S. Department of Education, 2020 revision. The current (2009) Skills List is defined by fields in the 2010 revision of the CIP. We map CIP 2020 fields to the CIP 2010 codes in the 2009 Skills List using the NCES official crosswalk.

include all in field 22, *Legal Professions and Studies*, of which 99.8% are in "knowledge worker" categories. In the field where our rule has the lowest specificity (field 35, for business fields related to *Interpersonal and Social Skills*), 81% of workers are in "knowledge worker" categories, but this a minor field representing just 0.04% of workers.

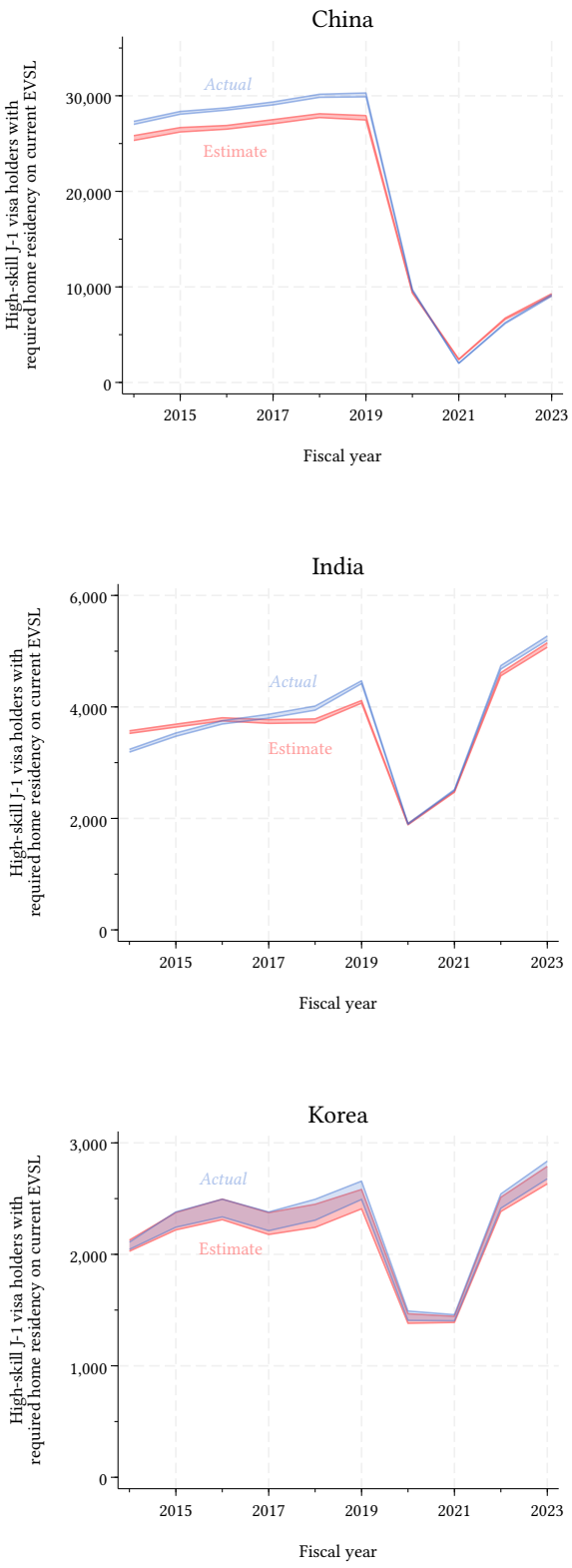
The figure also shows that our rule is highly sensitive, that is, it exhibits a low false-negative rate. Across all countries, the large majority (84%) of workers in fields that we do not classify as "knowledge-intensive" fields are visitors who are not in "knowledge worker" categories. For example, we omit from the "knowledge worker" classification all workers whose field is 19, *Family and Consumer Sciences*, of which 98.7% are au pairs. We likewise omit all workers in field 26, *Leisure and Recreational Activities*, of which 98.6% are either camp counselors or summer work travel.

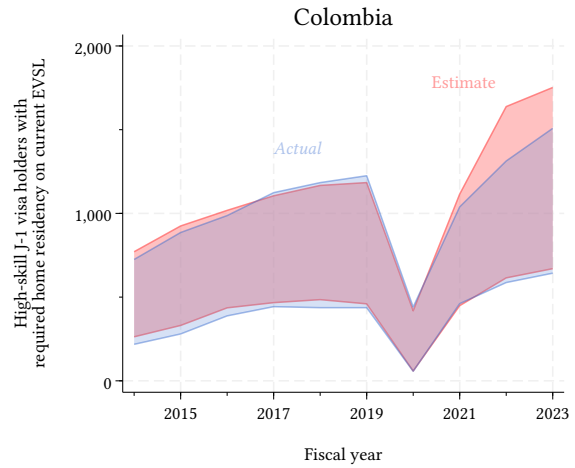
Finally, the figure shows that our rule yields slightly conservative estimates of the number of Affected High-Skill Visitors. In the lower portion of the figure, the field where our rule has the lowest sensitivity (field 52, for *Business Management and Marketing*), 58% of workers are in the category of summer work travel, which we do not classify as "knowledge workers." This omits the 42% who are in fact in "knowledge worker" categories such as research scholars and undergraduate and graduate students. But such omission gives our classification the desirable trait of estimating numbers of Affected High-Skill Visitors that are conservatively low. The alternative, classifying field 52 as "knowledge-intensive," would run the risk of overestimating the number of affected high-skill workers. Field 52 is large, while field 35 (discussed above) is very small, so the number of false negatives can be expected to outweigh the number of false positives. We thus expect that our estimates of Affected High-Skill Visitors are conservatively low.

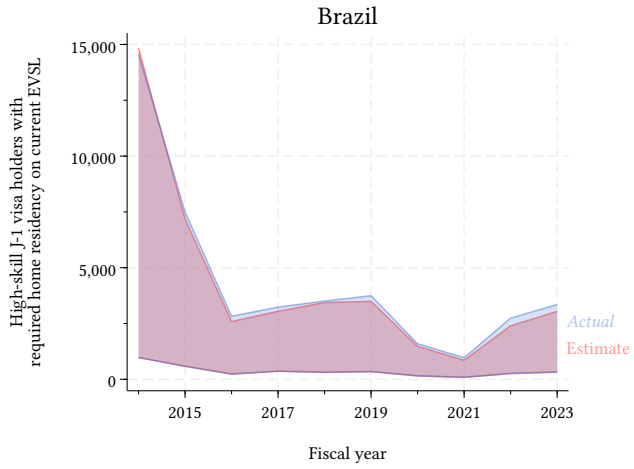
We thus arrive at a simple rule: A J-1 exchange visitor is estimated to be an Affected High-Skill Visitor when 1) her country of citizenship and field of specialization appear on the Skills List, and 2) she is estimated to be a "knowledge worker" category worker because her field of specialization is designated as a "knowledge-intensive" field in Figure 1 (excluding clinical physicians).

For many country-field pairs there is a range of uncertainty in the application of this rule. This is because, in our dataset, fields are tabulated at the two-digit level. Some countries (such as China) specify most or all fields on the Skills List at the two-digit level, well-aligned with our data. Other countries (such as Brazil) specify fields on the Skills List at the much narrower four-digit

Figure 2: Comparison of estimated number of Affected High-Skill Visitors versus the actual values, where known







level. For example, for China all fields under two-digit code 14 (*Engineering*) appear on the Skills List, but for Brazil the four-digit subfield 14.19 (*Mechanical Engineering*) appears on the list, while 14.20 (*Metallurgical Engineering*) does not. Thus a worker from Brazil in field 14 may or may not be subject to the Skills List. We address this, for workers in the two-digit fields where *only some* of the four-digit fields they contain appear on the Skills List, by placing an upper bound (assuming that *all* such workers have an unobserved four-digit field that appears on the Skills List), and a lower bound (assuming that *none* of those workers have an unobserved four-digit field that appears on the Skills List). The true value must lie somewhere in between. This does not tend to produce a great deal of uncertainty in the overall totals. For most countries, either the entire two-digit field appears on the Skills List or none of it does.

Testing the estimation rule

Figure 2 tests whether our rule is accurate and conservative for the five countries where the underlying truth is known. We have a full country-level tabulation of fields and J-1 program categories for China, India, South Korea, Colombia, and Brazil. The figure shows the actual number of Affected High-Skill Workers from each country in each fiscal year (in blue), and compares this to the estimates made by our rule (in red). The graphs show shaded bands, not lines, to indicate the range between the upper bound and lower bound explained in the preceding paragraph.

Each graph compares our estimates (in red) of the number of "knowledge workers" affected by the Skills List to the true values (in blue), for the only five countries where we have three-way tabulated data that allow this comparison. Areas of overlap are purple. The ranges show the possible values given that the underlying dataset classifies workers at the broader two-digit field level, but some countries (such as Brazil) use the Skills List to classify workers at the four-digit subfield level.

In Figure 2, both our estimates and the actual values omit *Alien Physicians*, because their home residency requirement is almost always determined independently of the Skills List. Two other small categories of visitor — *International Visitor* and *Government Visitor* — have a home residency requirement determined independently of the Skills List because they are government-funded, but our method cannot omit them from the estimates because they are widely dispersed across different fields. But the actual values for these five countries in Figure 2 *do* omit *International Visitors* and *Government Visitors*. So Figure 2 serves as a check on whether the inclusion of this small group tends to meaningfully inflate our estimates of the number of people subject to the home residency requirement. It does not.

Figure 2 shows our estimation rule generates accurate and generally conservative figures for a variety of important countries. For China, the estimate is exact for the past four years; it is slightly conservative in earlier years. For India, the estimates are likewise highly accurate, especially in the last four years, and conservative as expected over the last eight years. For Korea, the estimates are so accurate that the two bands almost perfectly overlap in all years — though the estimates by our rule are slightly conservative. The range of uncertainty is greater for Colombia, where the Skills List specifies many fields at the four-digit level, but there is still close overlap of the true figures with the estimates by our rule in all years. For Brazil, where again there is a relatively wide range of uncertainty, the

Table 1: Estimated total number of high-skill visitors affected by the current Skills List and a proposed new Skills List

Fiscal year	Total J-1	High-skill J-1	High-skill and affected by current Skills List		High-skill and affected by proposed new Skills List	
			Lower bound	*Upper bound*	*Lower bound*	*Upper bound*
2014	314,051	131,390	43,454	61,645	3,990	3,996
2015	317,495	125,889	43,983	54,879	3,917	3,922
2016	322,771	120,818	44,529	51,348	3,872	3,877
2017	327,768	120,039	45,005	52,349	4,040	4,047
2018	328,305	119,516	45,448	53,662	4,152	4,154
2019	335,297	119,078	45,468	53,900	4,273	4,294
2020	94,529	43,874	16,541	19,809	1,308	1,310
2021	114,367	38,650	12,058	15,885	3,293	3,293
2022	264,251	84,964	25,388	33,732	6,481	6,482
2023	300,112	92,022	30,308	40,086	8,195	8,199
Total (2014–2023)	**2,718,946**	**996,240**	**352,182**	**437,295**	**43,521**	**43,574**

red and blue bands overlap so perfectly that they are difficult to distinguish. This evidence supports the view from Figure 1 that our rule is highly specific and sensitive, and generates estimates that are slightly conservative.

Estimated impact of the current Skills List, and a proposed revision

We can then apply this rule across all countries to arrive at estimates of the total number of high-skill visitors affected by the current Skills List in each year, excluding clinical physicians. Table 1 displays these totals, with fiscal year in the first column. The second column shows the number of first-time J-1 visa records, for all countries, fields, and worker categories. The third column shows the number of those J-1 visa records that are in "knowledge worker" categories (e.g. including Research Scholars, omitting camp counselors), across all countries and fields. The fourth column shows the *lower bound* on our estimates of the number of those Affected High-Skill Visitors, while the fifth column gives the *upper bound*.

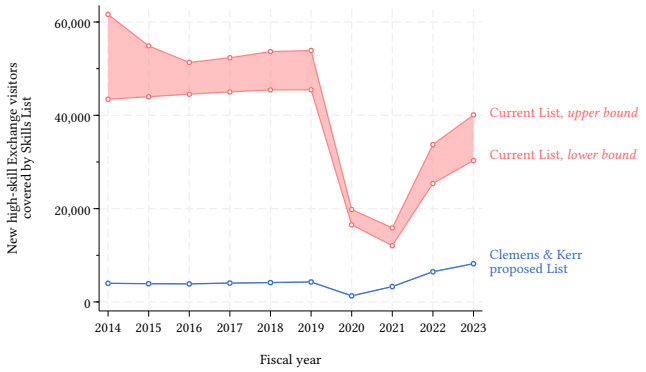
The estimates in Table 1 imply that, of the 1.02 million high-skill workers who came to the U.S. on J-1 visas in the past decade, between 35.4% (352,182) and 43.9% (437,295) were subject to the two-year home residency requirement imposed by the Skills List. That is, the true number of high-skill visitors covered by the Skills List in the average year, roughly but conservatively, lies between 35,000 and 44,000.

How would these estimates differ if the Skills List were reformed? Here we consider the effects of the revised Skills List proposed by Michael Clemens and William Kerr.[26]

In the Clemens-Kerr proposal, a simple algorithm determines whether each country-field pair is assigned to the Skills List. Each country is initially assigned one of three groups of fields based on its level of development: low-income countries (e.g., Afghanistan, Malawi) are given a *Broad* list of fields, lower-middle income countries (e.g., India, Morocco) receive a *Narrow* list of fields, and upper-middle income countries (e.g., China, Brazil) receive an even smaller *Minimal* list. The *Broad* list includes direct service providers in health and education, as well

26. Michael A. Clemens and William R. Kerr (2024), "Modernizing the Exchange Visitor Skills List," Policy Brief co-released by Harvard Business School and the Peterson Institute for International Economics, https://www.piie.com/publications/policy-briefs/2024/modernizing-us-exchange-visitor-skills-list

Figure 3: The number of high-skill workers affected by the Skills List in its current form (red) and a proposed revision of the Skills List (blue)



as specialists in engineering, infrastructure, and agriculture. The *Narrow* list focuses on health and education workers, while the *Minimal* list includes only the most specialized health workers. Each country's initial classification is then adjusted by four criteria considering its special circumstances: countries that are especially small or exhibit especially high rates of skilled emigration are assigned a field list one step broader than their initial classification, to reflect the special challenges of those countries. Those with especially small skilled diasporas, and especially strong systems of tertiary education, are assigned to a field list one step narrower, to reflect the higher marginal benefit and lower marginal cost of skilled emigration for those countries.

The consequences of the Clemens-Kerr proposal for the overall impact of the Skills List are estimated in the final columns of Table 1. In FY2023, the number of high-skill workers affected by the proposed Skills List would be a little less than one fourth of the number affected by the current List. This is primarily because, for most countries that appear on the current Skills List, all or almost all fields of specialization appear on the List. In other words, workers from most countries that appear on the current Skills List are very broadly affected by the List. For most countries either *both* specialists in medical care (field 51) *and* library science (field 25) are deemed "clearly required" for development of the home country, or neither are. The Clemens-Kerr proposal selectively targets specific skills that are most clearly required uniformly across all countries at similar stages of development while accounting for their special circumstances.

Figure 3 compares the overall impact of the current Skills List (in red, Table 1 cols. 4 & 5) to the impact of the proposed new Skills List (in blue, Table 1 cols. 5 & 6). Of course, the precise impact of the current or a future Skills List cannot be quantified without knowing, for each country and 2-digit field of exchange program activity, how many J-1 visa holders are sponsored with home country or U.S. government funding — the only other broad basis for the home residency requirement regardless of field. This information is not publicly available, but it is understood that such government funding focuses on a few of the smallest J-1 program categories (e.g., International Visitors) or a few government funding schemes for relatively few individuals (e.g., Fulbright).[27] And in Figure 2 above, we show that our estimates remain conservative for five key countries despite their inclusion of a small group of government-funded International Visitors and Government Visitors. This is because other choices, particularly the omission of all visitors in field 52 (Business, Management, and Marketing) create a dominant tendency for the estimates to be conservative.

Thus, we are able to suggest that adopting the Clemens-Kerr proposal would reduce the number of Affected High-Skill Workers by about 90%. Meanwhile, the counterweight of a home residency requirement based on government funding would be untouched by a revised Skills List.

In general, Figure 3 shows the proposed new Skills List is less restrictive. But the number of high-skill workers affected by the proposed Skills List would have been generally rising over

27. U.S. government-funded J-1 exchange visitors are principally those participating in the Government Visitor and International Visitor categories, the Fulbright program (about 1,000 inbound students and scholars each year commonly in the Student or Research Scholar categories), or in research programs with U.S. government agencies (e.g., the National Institutes of Health) but also include a few others such as high school students (e.g., Congress-Bundestag program in the Student-Secondary category). See e.g., information from the State Department on the International Visitor (https://eca.state.gov/ivlp) program, Fulbright (https://exchanges.state.gov/non-us/program/fulbright-foreign-student-program)program for foreign students and scholars, and Government Visitor (https://j1visa.state.gov/programs/government-visitor/) program. Home country-funded J-1 exchange visitors are primarily those in the Student categories and incidentally some in the Research Scholar category. These home-country funding schemes are very important for the sending country, but are best understood as a relatively small percentage of the Exchange Visitor Program. The J-1 participant totals for Student Doctorate and Student Masters categories, often funded by home country governments, represent only about 2.5% of individuals we call "high skill." For example, those analyzing Chinese government sponsorship of its citizens going abroad estimate that almost all of that funding goes to students and scholars but that only about 7% of Chinese students studying across the globe are financially supported by the Chinese government while a small number of research scholars, up to around 3,500 individuals annually, receive Chinese government funding to go abroad (and the U.S. is not the sole destination country). See e.g., "Overseas Chinese Students and Scholars in China Drive for Innovation" (U.S.-China Economic Security Review Commission, October 2020, https://www.uscc.gov/sites/default/files/2020-10/Overseas_Chinese_Students_and_Scholars_in_Chinas_Drive_for_Innovation.pdf), "The China Scholarship Council: An Overview" (Center for Security and Emerging Technology, July 2020, https://cset.georgetown.edu/wp-content/uploads/China-Scholarship-Council-Overview.pdf).

Figure 4a: The current Skills List, fraction of all high-skill workers affected, versus country's level of development

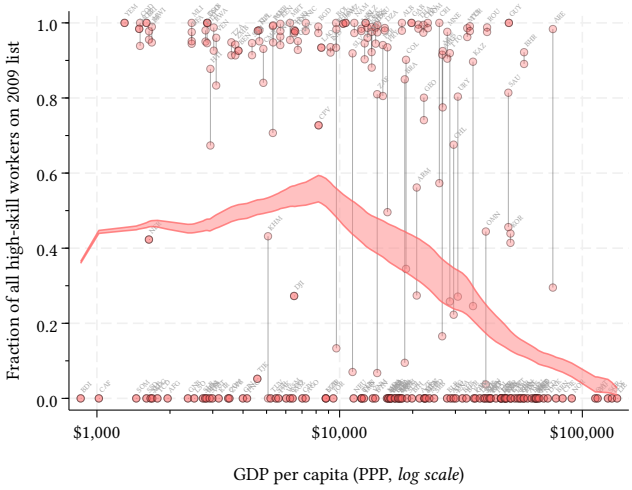
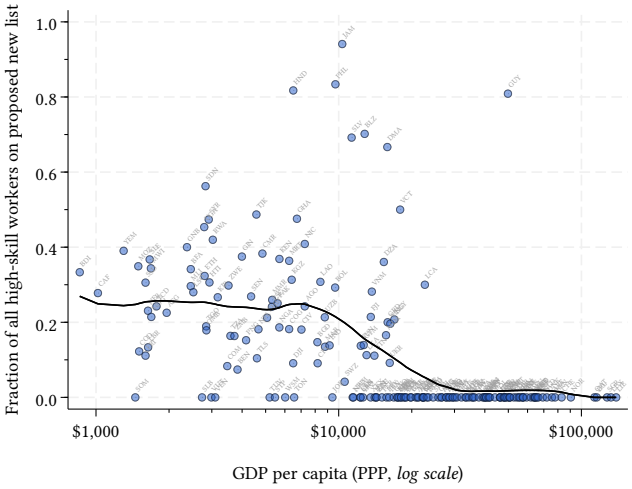


Figure 4b: Proposed new Skills List, fraction of all high-skill workers affected, versus country's level of development



the past decade, if the proposed List had been applied in those years, whereas the number affected by the current Skills List fell sharply in the COVID-19 crisis and has not yet achieved its prior levels.[28]

Countries targeted by the current Skills List

The current Skills List, like its predecessors, was primarily written based on requests from foreign governments. The result is a List that is erratic and arbitrary with respect to the level of development of migrants' home countries. Figure 4a plots our estimates of the fraction of all knowledge workers from each country whose field appears on the current Skills List. When a country's estimate has no range of uncertainty, the country appears as a single dot. When it does have a range of uncertainty, the country appears as two dots connected by a vertical line, where the upper and lower dots respectively indicate the upper and lower bounds. The red band in the middle of the figure shows a moving average of the fraction, at different levels of development. The upper line of that band shows the average upper-bound estimate at each level of development, and the lower line of the band shows the coverage lower-bound estimate. As before, clinical physicians are excluded.

Two features of the current Skills List stand out in Figure 4a. First, it is arbitrary. Although the List is mandated by law to restrict workers "clearly required" for development, the average fraction of knowledge workers affected by the List *rises* with the country's level of development, up to an average income of roughly $10,000 per person per year (measured in purchasing power at U.S. prices or PPP), about the level of India or Morocco. Second, the Skills List is erratic. Countries at very similar levels of development might restrict almost all fields, or almost none, seemingly at random. Mali restricts almost all fields while The Gambia restricts none, at the same average income. Bolivia restricts almost all fields while Jordan restricts none, at the same average income. And so on. In very few countries is the fraction of skilled workers selectively targeted — that is, anything other than almost all or almost none. Even in those more selective countries, there is no clear trend toward a lower fraction in more developed countries.

Figure 4b shows the consequences of the new Skills List proposed by Clemens and Kerr. There are no substantial ranges of uncertainty, because that proposal defines fields of specialization at the two-digit level. In the poorest countries toward the left of the graph, the proposed List is less restrictive but not radically different from the current List. Under the proposed List about 25–30% of high-skill workers from the poorest countries are restricted, compared to 40–45% under the current, less selective List.
In the proposed list, Figure 4b shows that there is much less variation in the fraction restricted at a given level of

28. There is almost no uncertainty in the estimated impacts of the proposed new Skills List because it is principally defined at the two-digit field level, the same level of disaggregation of our dataset.

development. In the proposed list there is systematic and transparent allowance for countries' unique circumstances: El Salvador, for example, has a high fraction of workers restricted relative to its income level due to its large rate of prior skilled migration and relatively weak skill stock at home; Guyana has a high fraction restricted relative to its income level for the same reason, plus the additional factor of its small population. Eswatini and the Solomon Islands have relatively low fractions of high-skill workers restricted relative to their income levels because even though they are small, they are *underrepresented*: Neither has yet had the opportunity to establish a sizeable community of skilled workers in the United States that can facilitate global linkages of trade, investment, and technology transfer to the home country.

The proposed new Skills List contains only limited restrictions for some of the most developed countries — with the exception of small countries — as Figure 4b makes clear. Consider the five major countries in Figure 2, for example. In FY2023, our conservative estimate is that the Skills List affected between 17,805 and 22,021 high-skill category workers from those five countries collectively — more than half of the total affected across all countries. Under the Clemens-Kerr proposal for the Skills List, this would have been just 762 workers, many of them non-physician health workers such as nurse practitioners and pharmacists from India. On the current Skills List, all engineers of all subfields are restricted by the home residency requirement; on the proposed new List, no engineers are. This reflects the current of modern social science, discussed above, which has documented the crucial role of Indian diaspora engineers in the cultivation of high-tech industry at home in India via ties of trade, investment, training, institutional partnerships, and technology transfer. Figure 4b also shows that restrictions under the proposed List are much more extensive for the countries where development is much less advanced than the five countries highlighted in Figure 2.

Conclusion

This paper presents new evidence on the impact and shortcomings of the current Exchange Visitor Skills List, and underlines the critical importance of updating the List to reflect contemporary understandings of skilled migration. It highlights that the current list, based on outdated notions of "brain drain," often counterproductively restricts the flow of talent that is crucial for both the United States and the migrants' countries of origin. Skilled migrants contribute significantly to economic growth and innovation in migrants' home countries, via the creation of international networks that channel trade, investment, and ideas central to overseas development. By revising the Skills List to align with modern economic insights, the U.S. can better support global development goals while enhancing its own technological and economic leadership. This revision is not only a matter of justice for individual migrants but also a strategic imperative for fostering international cooperation and shared prosperity.

It is no accident that the U.S. Department of State's Undersecretary for Public Diplomacy, through the Bureau of Educational and Cultural Affairs, administers the J-1 exchange visitor program. Recognizing that furthering a country's national interests includes broadening dialogue between a country's own citizens, institutions, businesses, and communities and their counterparts abroad is the essence of public diplomacy.[29] When J-1 researchers, interns, trainees, professors, and others exchange ideas around science, technology and engineering innovation, for example, it is a perfect example of engaging in public diplomacy – and American soft power. As the iconic political scientist Joseph Nye observed, successful states need both hard and soft power: the capability to coerce others but also the capacity and commitment to shape others' long-term attitudes and preferences.[30]

Shaping attitudes and preferences across the globe is perhaps nowhere more vital than in an era in which technology competition, and the use of technology for good, has outsized relevance. And, once individuals' preferences and attitudes are shaped through J-1 program participation, our law, while not necessarily providing an avenue to remain in the United States, allows complete freedom for J-1 exchange visitors to follow their high-skill journey wherever it takes them, including ultimately obtaining permanent residency here, *except* when their skills are "clearly required" by their home country. American commitment to public diplomacy is not diluted by better accounting for the economic realities of international skill flows. The State Department's approach to designating countries and skills on the Skills List must be updated to account for the recent revolution in economists' understanding of the relationship between skilled migration and development.

29. See e.g., USC Center on Public Diplomacy, https://uscpublicdiplomacy.org/page/what-is-pd

30. See Joseph S. Nye, Jr., Soft Power: The Means to Success in World Politics (Public Affairs, 2004).

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The Institute for Progress (IFP) is a non-partisan think tank focused on innovation policy. IFP works to accelerate and shape the direction of scientific, technological, and industrial progress. Headquartered in Washington D.C., IFP works with policymakers across the political spectrum to make it easier to build the future in the United States.

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